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ABSTRACT

Approximately 200 hours of observation of classes in 13 school districts, selected to represent diverse SES and expenditure levels, were coded for various dimensions of classroom activity structure. The coding categories were derived from prior work by Grump and Grannis. In addition, observations of individual students' on-task behavior were made. Results are presented which describe the salient features of mathematics and social studies classrooms at fifth-grade level. In addition, student involvement is examined in relation to various setting features in the context of a theoretical framework. (Author/MK)

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ECOLOGICAL FEATURES OF FIFTH-GRADE MATH AND SOCIAL STUDIES CLASSES AND THEIR RELATION TO STUDENT INVOLVEMENT[1]

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In this paper I will discuss some of the findings* emerging from an analysis of a pilot data base collected by J. Alan Thomas and his students in conjunction with a study of educational finance and productivity (Thomas, 1977). Thomas and I are currently collaborating in the collection of a more comprehensive data base, but my remarks today rest on a post-hoc coding of materials which Thomas made available to me after they were collected.

The data base consisted of approximately 200 hours of classroom observations collected in thirteen school districts in the greater Chicago area (excluding the City of Chicago). The districts were selected to be representative of 3 levels of socioeconomic status and two levels of per pupil expenditure (high third and low third determined on a statewide basis). A fifth grade classroom (or classroom group, if departmentalized) was observed in each district for approximately two weeks. One observer attempted to describe the grouping and spatial location of students, their physical activities, materials in use, the teacher's location and role, and the content of the lesson. In addition, the same observer attempted to code student involvement in the academic learning by focusing in rotation on a subsample of 8 children in the classroom for approximately 10 seconds each. An effort,

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which was not always successful, was made to observe each child every two minutes. Observers focused on math classes and whenever possible on social studies. When social studies was not taught, a second subject (science or English) was substituted. The idea was to obtain data regarding a basic skill subject and a so-called enrichment subject.

Since the data derive from a pilot study, they are of variable quality. Nevertheless, I believed that a useful coding of some aspects of classroom setting structures could be undertaken and would be a contribution to our understanding and description of classroom life in a diverse set of American public schools. Thus my main purpose was to apply a series of ecologically based coding categories to these descriptions of fifth grade math and social studies classes.

In addition to a descriptive purpose, I also wished to make a preliminary test of some theoretical ideas deriving from the work of both Paul Gump and Joseph Grannis. Gump and others, notably Roger Barker, have conceptualized the classroom as a behavior setting with organizing features which can be studied. In his work, Gump (1967) studied third-grade self-contained classrooms of a traditional sort and described the intra-class behavior settings using teacher chronicles as a primary method. Gump developed a variety of codings applicable to classroom behavior settings, including such variables as pacing, teacher leadership patterns, and group quality. He found that student involvement related to certain of these segment properties. In particular, externally-paced segments such as recitation produced higher involvement than child-

paced segments such as seatwork in the traditional third grades.

Grannis (1978) built on Gump's work and extended it, while examining a small sample of second-grade Follow Through classrooms of diverse philosophy. Grannis has developed the idea of congruence or fit among certain aspects of the knowledge and social order of the classroom. Grannis coded child behavior streams both for involvement and for setting properties. He coded many features of settings, but paid particular attention to pacing, child-child interaction, the nature of feedback available to children, and whether children had options regarding choice of the activities they pursued. The core idea he examined was that children are more involved in learning when setting features are well meshed than under incongruent conditions. An example of a congruent situation would be a teacher-paced lesson in which child-child interaction was low, material feedback properties were low and children did not have activity options. A different congruent situation would be a case in which children chose their activity, had materials such as manipulatives which provided feedback or correction, were permitted to use other children as sources of help, and paced their own work. The seatwork situation, often found in schools, can frequently be considered an incongruent situation as when the child is pacing his/her work but has not selected the activity, and often has little feedback available. Grannis found in his study that congruent situations did produce higher involvement rates than did incongruent situations. However, both Grannis and Gump had studied the early elementary grades and considerable question remains as to the theoretical power of the ideas and their generalizability.

The data base made available to me, was coded for many of the Gump and Grannis variables, as well as some others which I thought might be useful descriptors of lesson features. Our first task was to read a description of a math or social studies class period and break it into instructional and transitional segments. The observers had been instructed to note such breaks in the format of instruction when materials changed, groupings changed or major topics changed (these were referred to by Thomas as instructional technologies). We usually found enough information to break the records into activity segments with reasonable ease and we noted the duration of the segments, the number of children involved, whether it was a whole class segment or if more than one segment was going on at the same time. We[1] then coded about two dozen different features of the segments-- lifting freely from the prior work of Gump and Grannis. The first page of your handout is a sample coding sheet. After coding all of those segment features, we coded at the bottom of the sheet a lay person's name for format of the instructional segment --- for example, recitation, seatwork, discussion, group work, audio-visual, games, etc. Thus we tried both to be reasonably analytic and picky and rather global in our depiction of these activity segments.

Coding agreement for the two coders was checked periodically and was above 90%. We also coded many records twice and discussed disagreements. However, the reliability of the field work itself

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[1] Pauline Urton assisted me in the development and application of the coding system.

is not calculable. The records were uneven, some observers providing more information than others and more regularly observing individual students. We therefore treat this data analysis as preliminary, but do believe that the data regarding major segment features are probably reasonably accurate. With regard to student involvement, we actually discarded data from two classrooms because we believed the student observations were of extremely poor quality-- lacking almost any variation at all.

The Sample

As indicated earlier, one fifth-grade classroom was observed in each of thirteen school districts which varied by SES and school expenditure levels. Figure 1 shows some characteristics of the sample, including the operating expenditure per pupil, 1970 median family income for the district, mean occupational status scale for the classroom (NORC Scale), typical class size, and the number of days each subject was observed.

Having described the general method and the nature of the sample, I turn now to the results of some of the analyses we have performed on the basic activity segment data.[1] The first main look at the data involved an examination of the structure and attributes of math and social studies segments at the fifth-grade level. In the math periods observed, there were a total of 188 instructional segments (excluding transitions) identified. During 171 of these, usable individual student observations were

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[1] I thank Fran Kemmerer for her assistance in running the statistical analyses.

available.[1] The average duration of a mathematics segment was 24.0 minutes (s.d. 14.9). Social studies segments numbered 121, with an average duration of 20.4 minutes (12.1 = s.d.). One-hundred and ten social studies segments contained usable student involvement observations. Mean level of on-task behavior in the social studies segments was 79.2% (s.d. = 18.2), in the math segments the mean level was 77.4% (s.d. = 16.8). Table 1 contains results showing the segment types we found in the two subject matters, the average duration of the segments and the average percentage of on-task behavior coded for the different segment types. In this table, instructional format is described using the everyday terms such as recitation and seatwork.

An inspection of Table 1 will show, not unexpectedly, that the types of segments found in math and social studies classes do differ. The differences are evident both with regard to the overall distribution of segment types and to typical durations. The most apparent differences are that seatwork occurs much more frequently in math than in social studies (46 to 26% of the segments) and seatwork segments are somewhat longer in math classes (28.5 to 22.3 minutes). Correcting work is also more common in math classes (11 to 6%) and sessions of correcting last longer (17.3 vs. 11.7 minutes). Games and contests are also found more often in math classes (7 to 2%). Recitation segments occur about equally often in both subjects and are of similar duration. What then happens in social studies which doesn't in math? Two major types

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[1] See note on Figure 1.

of segments are virtually unique to the social studies classes observed: class discussions and student reports account for about seven percent of social studies segments and another seventeen percent of segments are audio-visual. Films and slides were used frequently in the social studies classes observed and very rarely appear in math classes. Lectures occur somewhat more often in social studies (11 vs. 7 percent) but are considerably shorter in social studies than in math (13.8 vs. 27.3 minutes). Groupwork was only seen on one occasion during the entire study.

To summarize, the fifth graders observed experienced about three quarters of their math instructional segments in either a seatwork or a recitation format. In social studies, three-quarters of the segments were either recitation, seatwork or audio-visual. There appears to be a bit more variety overall in the instructional formats used in social studies than in math classes.

Does student involvement relate, at this level of analysis, to the types of segments or to subject matter? Overall, there is a slightly higher level of on-task behavior in social studies than in math. As is evident in Table 1, some segment types produce highly similar levels of involvement in both subject areas-- in particular there are virtually no differences in seatwork, or recitation involvement levels. The lecture format produces higher on-task behavior in math classes, whereas correcting segments are associated with considerably higher involvement in social studies. Absolutely, the very high on-task rate for the audio-visual segments should be noted as should the high rates related to contests and games, and tutoring. Notably lower rates are produced during

discussion and particularly during student reports in social studies and during correcting work in math.

A related finding accents this pattern. Observers coded on and off behavior and also the occurrence of waiting or doing other academic tasks which were not the focus of the segment. Twenty percent of the math segments had occurrences of students observed doing other tasks-- the highest rates of such behavior were during correcting segments, followed by recitation segments. Waiting was observed in 44% of the math segments: correcting segments and testing segments had the highest levels of waiting.

In the social studies classes, 14% of the segments had observations of waiting and 33% had observations of children doing other than the assigned tasks. As in the math situation, correcting and testing produced the highest occurrence of waiting. With regard to pursuing other tasks, student reports produced by far the highest degree of this behavior, with lectures also showing a fair rate of this behavior.

Having looked at the data in this relatively global form, let us turn to some of the major coding categories used by Grannis and Gump (see Table 2). It can be recalled that Grannis keyed his idea of congruence around the variable of pacing (later called press). We found that 55% of our segments were teacher-paced, 24% were a combination of teacher and child paced, 17% were child-paced and 4% were Av. Social Studies was teacher paced more often than math (60% vs. 52%) and child pacing occurred in 21% of math segments and 11% of social studies segments.

With regard to options, pupils in this sample had little

opportunity to choose their own activities. Ninety-three percent of their activities were teacher prescribed, in six percent of the segments there was a partial option, and one percent were open. Learner-learner interaction was also heavily restricted. Low or no interaction occurred in 82% of the segments, medium interaction took place in 14%, and high levels of interaction in which cooperative activity was needed occurred in only 4% of the segments. Interestingly, higher levels of interaction were more common in math classes than in social studies.

We also examined the feedback properties of materials or if the teacher was providing feedback (usually orally). Overall, we found that 35% of the segments had no feedback and for another 11%, feedback was not relevant to the activity structure. The teacher provided feedback in 45% of the segments and there was restricted or unrestricted feedback in 8%. Subject matter differences with regard to feedback were evident, with the teacher providing feedback in 49% of math segments as contrasted with 38% of the social studies segments. In social studies about one-fourth of the segments were not coded with regard to feedback (e.g., AV segments and lectures were typically not coded for feedback).

The data regarding these setting properties depict a heavily teacher dominated educational process, with few learning options available to children, and feedback coming predominantly from the source of authority-- the teacher. Children do not work together often in these fifth grades. Table 2 also shows the percentage of on-task behavior associated with these different setting variables. While there is some variation, taking the setting variables one at

a time in general does not produce systematic trends in student involvement which are based on sufficient cases to be trustworthy. The possible exceptions to this, are a statistically significant difference ($p<05$) between segments in which learner/learner interaction is low and those in which it is high, and the unrestricted feedback condition versus the no feedback ($p<01$) or teacher feedback segments ($p<01$) in math.

Gump coded his behavior setting data for Group Quality. As would be expected from the data already presented the greatest proportion of our segments were whole class-- over 82%. Eight percent of the segments had a subgroup of children who were interacting in some way with one another; and a similar number had a group less than the whole class who did not interact with one another (e.g., a subset of the class doing seatwork).

Earlier, we raised the possibility of examining the variables of options, pacing and feedback in a manner similar to Grannis (1978) to see if congruent settings would be associated with higher involvement rates. Grannis used pacing or press as his pivot variable and then asked if options and feedback were consistent with it. Thus for example, a segment coded teacher paced would be completely congruent if there were closed (no) options, and no feedback. A segment would have an inconsistency score of 2 if the segment was teacher paced, the students had high feedback materials, and there were no options. Thus inconsistency scores, using the three variables, could range from 0 to 4. Since many of our segments included the teacher providing feedback orally, we coded that condition as partial feedback, a convention not used by Grannis. We could

not use all of our segments for this analysis as we have yet to work out how to deal with the Audio-visual segments, and some segments were missing data for one or another of these so-called control variables. Table 3 contains the data for this test of the congruency hypothesis and a listing of the segments which were used in the test. As can be seen from the listing, in this sample, higher levels of inconsistency are exclusively associated with child pacing-- whereas moderate inconsistency arises under conditions of teacher pacing or joint teacher-student pacing. There is a clear trend in the data supporting the idea of higher on-task behavior in segments which are more congruent as one examines both math and social studies segments which are totally congruent, settings with inconsistency scores of 1, and settings with inconsistency scores of 2. The trend toward lower involvement continues in math settings with inconsistency scores of 3, but then a reversal occurs in both subject areas in the settings with the highest inconsistency scores, 4. Grannis also found a stronger pattern in basic subjects as contrasted with enrichment subjects.

It should be noted that all of the score 3 and 4 settings are child paced, most being some form of seatwork or tests. Levels of on-task behavior in these conditions do not rise as high as those in the totally congruent conditions, but it does appear that fifth graders are moderately attentive under these conditions, when they are doing teacher assigned work individually and not interacting with others or exercising choices to any significant degree.

We believe these initial findings warrant further investiga-

tion, but it is apparent that more analysis is needed in order to better understand the role of the setting factors in student on-task behavior. For 10 and 11 year-olds who spend a large portion of their school day working on individual tasks, the seatwork condition appears to produce a fairly steady and not unduly low level of on-task behavior. Future analyses of these data and those we are currently collecting should clarify some of these dynamics and hopefully will also provide us with a broader range of segment types to explore.

This paper can only begin to address the data we currently have in hand. We have examined these data for socioeconomic differences in activity structures, and have also looked at the impact of expenditure levels and class reading achievement levels on these activity structures and student involvement. There is insufficient time to present those analyses here and we believe a much clearer picture will be available when data we are presently collecting can be added to the pool of cases.

While the data I have discussed today are in many respects pedestrian and unsurprising, the basic descriptive material seems essential for an adequate characterization of public school education today and classroom life. The ecological approach does seem to hold the promise of both effectively describing classroom settings and theoretically understanding some of the dynamics of classroom functioning and learning.

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CHOOL_____ DATE_____ DAY_____ SUBJECT_____ TIME_____

SEGMENT #: _____ TIME:_____ DESCRIPTION:_____

_____

_____

_____

OF STUDENTS INVOLVED:_____

SEGMENT OCCURRENCE: Only (1) Parallel (2) Parallel>2 (3)

TEACHER LEADERSHIP PATTERN: Not in Segment (1) Watcher/Helper (2) Participator (3) Action Director (4) Recitation Leader (5) Instructor (6) Reader (7) Tester (8)

GROUP QUALITY: Total Group: Class/Interdependent (1) Class/Private (2) Class/Neither Private nor Interdependent (3)

SUBGROUP: Class/Sectioned (4) Group/Interdependent (5) Group/Private (6) Group/Neither Private nor Interdependent (7)

PUPIL ACTIVITY: Rest (1) Own Materials Attend (2) Own Materials Task (3) Class Events Attend (4) Class Events Task (5) Draw/Make (6) Sing, Chant, Play Instruments (7) Large Muscle Activity (8) Readying (9)

ACTION SEQUENCING: No Pace-Rest (0) Self-Pace (1) Self-Pace/Towards a Turn (2) External Pace/No Performance (3) External Pace/Serial Performance (4) External Pace/Mass Performance (5) Cooperative Pace/Joint Performance (6)

OPTIONS: Closed (1) Partial (2) Open (3)

PACING: Teacher (1) Combination (2) Child (3)

OPERATIONS PRESCRIPTION: Total (1) Partial (2) Not Prescribed (3) NA (4) DK (5)

MATERIALS RESPONSIVENESS: No Feedback (1) Restricted (2) Unrestricted (3) NA (4) DK (5) Teacher Providing Feedback (6)

LEARNER-LEARNER INTERACTION: Low (1) Medium (2) High (3) DK (4)

COGNITIVE COMPLEXITY: Receive Information (1) Learn Concepts or Skills (2) Apply Concepts or Skills (3) NA (4) DK (5)

TYPE OF MATERIALS: Textbook (1) Work Sheets-Dittos (2) Paper & Pencil (3) Books (4) Blackboard (5) Maps (6) Manipulatives (7) Other (8)

LESSON INTEGRATION (T Use of Materials): Materials/AV Not Introduced/Not Articulated with Topic (1) One Source/Text Used for Topic (2) Materials/AV Introduced and Useful for Topic (3) Diverse Materials/Texts Used - Teacher-Tailoring Materials to Topic (4) Other (5)

COMMENTS:

INSTRUCTIONAL FORMAT: Seat work (1), Individualized Seatwork (2), Recitation (3), Discussion (4), Lecture (5), Checking Work or Tests (6), Tests (7), Group Work (8), Films/AV (9), Contests (10), Student Reports (11), Tutoring (12), Other (13).

SAMPLE CODING SHEET

TABLE 1

Number and Percentage of Different Instructional Format Segments, Average Durations, Average Percentage on Task (PON), Average Percentage Waiting (PW), and Average Percentage Other Tasks (POTH), for Math and Social Studies Classes.

	Social Studies (121)						Math (188)					
	N	%	Dur	PON (110)	PW* (15)	POTH* (36)	N	%	Dur	PON (171)	PW* (75)	POTH* (35)
Seatwork	21	17	19.9	773	060[4]	045[4]	56	30	28.5	775	088[24]	054[10]
Ind. Swk.	5	04	37.8	714	118[2]	-	17	09	29.6	771	110[4]	036[3]
Tests	6	05	18.0	810	197[3]	062[2]	14	07	27.4	765	246[10]	078[2]
Σ	32	26	22.3	771	119	051	87	46	28.5	775	132	054
Recitation	27	22	21.7	789	062[3]	087[8]	34	18	17.8	762	034[8]	130[10]
Rec/Lect.	1	01	20.0	825	-	175[1]	13	07	37.7	833	071[5]	097[3]
Rec/Swk.	3	02	27.3	628	-	090[2]	2	01	38.0	741	042[1]	122[1]
Rec/Disc.	5	04	24.6	818	048[1]	060[3]	-	-	-	-	-	-
Σ	36	29	22.5	781	059	081	49	26	23.9	777	048	122
Discussion	5	04	19.0	722	-	082[2]	-	-	-	-	-	-
Stu. Reps.	4	03	24.0	672	-	477[2]	-	-	-	-	-	-
Σ	9	07	21.2	700	-	280	-	-	-	-	-	-
Lecture	12	10	14.1	668	-	146[5]	12	06	28.7	781	138[3]	037[3]
Lect/Swk.	1	01	10.0	960	-	-	1	01	10.0	867	100[1]	-
Σ	13	11	13.8	690	-	-	13	07	27.3	788	129	-
Correcting	5	04	9.0	901	125[2]	-	17	09	15.3	711	211[11]	131[2]
Rec/Corr.	2	02	18.5	806	-	-	4	02	26.0	669	048[1]	301[2]
Σ	7	06	11.7	874	-	-	21	11	17.3	702	197	216
AV	14	12	17.9	909	-	103[2]	1	01	21.0	-	-	-
Lect/Film	5	04	20.8	915	-	090[4]	1	01	12.0	1.00	-	-
Disc/Film	1	01	14.0	861	-	-	-	-	-	-	-	-
Σ	20	17	18.4	908	-	094	2	02	16.5	1.00	-	-
Grp. Work	1	01	33.0	708	-	-	-	-	-	-	-	-
Tutoring	-	-	-	-	-	-	3	02	38.0	891	-	-
Contests	3	02	31.7	1.00	-	-	13	07	21.7	836	218[7]	-

*Superscripted numbers are the number of segments in which either waiting (PW) or other task (POTH) behavior was observed. Underlined averages are based only on those segments.

TABLE 2

Segment Properties: Pacing, Options, Learner/Learner Interaction and Feedback[1]

	Math				Social Studies				Total			
Pacing	N	%	PON	SD	N	%	PON	SD	N	%	PON	SD
1. Teacher	119	52	765	(179)	72	60	790	(188)	191	55	776	(183)
2. Combination	59	26	777	(157)	24	20	738	(190)	83	24	765	(168)
3. Child	49	21	787	(157)	13	11	797	(163)	62	17	789	(157)
4. AV	2	1	-	-	11	9	906	(092)	13	4	906	(092)
Options												
1. Closed	208	91	778	(168)	117	97	793	(182)	325	93	784	(175)
2. Partial	17	7	716	(172)	3	2	829	(052)	20	6	734	(163)
3. Open	3	1	940	(063)	1	1	621	-	4	1	860	(168)
Learner Int.												
1. Low or None	184	81	769	(175)	103	85	795	(183)	287	82	780	(179)
2. Medium	34	15	776	(128)	14	12	742	(184)	48	14	765	(147)
3. High	10	4	850	(149)	4	3	889	(140)	14	4	862	(142)
Feedback												
1. None	93	40	763	(163)	32	26	762	(178)	125	35	763	(167)
2. Restricted	7	3	799	(089)	6	5	836	(116)	13	4	819	(100)
3. Unrestricted	9	4	898	(079)	4	3	642	(078)	13	4	805	(149)
4. NA	7	3	846	(225)	33	27	808	(188)	40	11	814	(192)
6. Teacher	113	49	767	(174)	46	38	811	(191)	159	45	782	(180)

[1] Coding generally follows definitions of Grannis (1978) with some additions.

TABLE 3

Average Percentage On-Task (PON) by Consistency Scores of Segments[1]

Inconsistency Score	Seg. Desig.	Soc. Std. N	Soc. Std. PON	Soc. Std. SD	Math N	Math PON	Math SD	Total N	Total PON	Total SD
0	1111	8	857	106	4	969	036	12	894	103
	3333	-	-	-	3	940	063	3	940	063
	2262	1	870	-	1	708	-	2	789	115
Average 0			858			926			890	
1	1122	1	815	-	1	717	-	2	766	069
	1222	1	679	-	-	-	-	1	679	-
	1221	1	816	-	-	-	-	1	816	-
	2211	-	-	-	4	737	088	4	737	088
	1161	39	796	193	70	749	178	109	766	184
	1162	-	-	-	5	809	150	5	809	150
	1163	-	-	-	1	570	-	1	570	-
	1261	1	971	-	8	894	098	9	902	095
	1262	1	1.00	-	2	938	088	3	958	072
Average 1			803			766			778	
2	1211	6	655	188	22	726	174	28	711	176
	1212	5	722	247	5	739	104	10	731	179
	1232	2	654	072	1	938	-	3	749	171
	1231	-	-	-	1	911	-	1	911	-
	1233	1	708	-	-	-	-	1	708	-
	1332	-	-	-	1	750	-	1	750	-
	1131	1	551	-	1	867	-	2	709	223
Average 2			679			746			723	
3	1321	1	868	-	1	893	-	2	880	018
	1323	1	1.00	-	-	-	-	1	1.00	-
	1322	-	-	-	2	793	090	2	793	090
	2313	1	846	-	4	814	116	5	821	102
	2312	-	-	-	3	622	117	3	622	117
	2311	1	771	-	4	669	302	5	689	266
Average 3			871			645			765	
4	1311	7	779	187	19	801	135	26	795	147
	1312	-	-	-	2	818	154	2	818	154
Average 4			779			803			797	

[1]The first digit of the segment designation refers to options. 1 = closed options, 2 = partial options, 3 = open options. The second digit of the segment designation refers to pacing or press.

TABLE 3 Footnote cont.

1=teacher paced, 2=joint teacher and student pacing, 3=child pacing. This is the pivot variable on which consistency is judged.

The third digit of the segment designation refers to feedback. 1=No feedback; 2=restricted feedback, 3=unrestricted feedback, 6=teacher providing feedback.

The fourth digit of the segment designation refers to student-student interaction. This was not used in the calculation of consistency. 1=low or no interaction; 2=medium interaction; 3=high interaction. See Grannis for full details of coding.

FIGURE 1.--CHARACTERISTICS OF SAMPLE SCHOOL DISTRICTS AND CLASSROOMS.

LOW SES, LOW EXPENDITURE SCHOOLS (3)

*School 1.

Per Pupil Exp.: $1,584
Median Family Income, 1970: $10,005
Mean Occup. Scale: 39.1
Class Size: 21
No. Obs. Math.: 9
No. Obs. Science: 9

School 2.

Per Pupil Exp.: $1,556
Median Family Income, 1970: $9,564
Mean Occup. Scale: 35.8
Class Size: 26
No. Obs. Math.: 8
No. Obs. Soc. Studies: 5

*School 3.

Per Pupil Exp.: $1,439
Median Family Income, 1970: $11,745
Mean Occup. Scale: 34.1
Class Size: 37
No. Obs. Math.: 8
No. Obs. Soc. Studies: 8

MIDDLE SES, LOW EXPENDITURE SCHOOLS (2)

School 1.

Per Pupil Exp.: $1,331
Median Family Income, 1970: $13,089
Mean Occup. Scale: 45.7
Class Size: 24
No. Obs. Math.: 8
No. Obs. Soc. Studies: 8

FIGURE 1--Cont.

MIDDLE SES, LOW EXPENDITURE SCHOOLS (2)--Cont.

School 2.

Per Pupil Exp.: $1,478
Median Family Income, 1970: $10,448
Mean Occup. Scale: 44.2
Class Size: 31
No. Obs. Math.: 6
No. Obs. Soc. Studies: 8

LOW SES, HIGH EXPENDITURE SCHOOLS (3)

School 1.

Per Pupil Exp.: $1,585
Median Family Income, 1970: $9,530
Mean Occup. Scale: 33.9
Class Size: 30
No. Obs. Math.: 8
No. Obs. Soc. Studies: 8

School 2.

Per Pupil Exp.: $1,667
Median Family Income, 1970: $8,612
Mean Occup. Scale: 37.0
Class Size: 22
No. Obs. Math.: 8
No. Obs. Soc. Studies: 6

School 3.

Per Pupil Exp.: $1,919
Median Family Income, 1970: $8,999
Mean Occup. Scale: 27.3
Class Size: 23 (Science); 45 (Math)
No. Obs. Math.: 5
No. Obs. Science**: 7

FIGURE 1.--Cont.

MIDDLE SES, HIGH EXPENDITURE SCHOOLS (3)

School 1.

Per Pupil Exp.: $1,784
Median Family Income, 1970: $8,904
Mean Occup. Scale: 45.7
Class Size: 18
No. Obs. Math.: 7
No. Obs. Soc. Studies: 6

School 2.

Per Pupil Exp.: $1,715
Median Family Income, 1970: $12,293
Mean Occup. Scale: 46.5
Class Size: 21
No. Obs. Math.: 8
No. Obs. Soc. Studies: 8

School 3.

Per Pupil Exp.: $1,499
Median Family Income, 1970: $12,553
Mean Occup. Scale: 43.8
Class Size: 19 (Math); 25 (Soc. Studies)
No. Obs. Math.: 7
No. Obs. Soc. Studies: 7

HIGH SES, HIGH EXPENDITURE SCHOOLS (2)

School 1.

Per Pupil Exp.: $1,945
Median Family Income, 1970: $15,695
Mean Occup. Scale: 63.4
Class Size: 23
No. Obs. Math.: 7
No. Obs. Reading: 7

FIGURE 1.--Cont.

HIGH SES, HIGH EXPENDITURE SCHOOLS (2)--Cont.

School 2.

Per Pupil Exp.: $2,410
Median Family Income, 1970: $21,402
Mean Occup. Scale: 67.1
Class Size: 23
Math: 7
Soc. Studies: 6

*Data on student involvement not used due to unreliability.

**When analysis of Social Studies done, Science and Reading classes were eliminated.